

National Aeronautics and  
Space Administration



**NASA's  
Launch Services Program  
presents...**

# JASON-3

**Jason 3  
2015**

**Launch Vehicle**

**Falcon 9**

**Launch Location**

**Vandenberg  
Air Force Base, CA.**

**Launch Date**

**2015**

Scheduled to launch in 2015, the Jason-3 spacecraft will be the fourth in a series of ocean topography missions starting with the TOPEX/Poseidon satellite mission launched in 1992 and followed by Jason-1 (launched in 2001) and OSTM/Jason-2 (launched in 2008). Jason-3 will precisely measure sea surface height and provide data used around the world for weather, climate and ocean forecasts, in addition to supporting a wide variety of scientific studies. These measurements will provide scientists with critical information about human-caused climate change, global sea level rise, and help them gain insight into changes in circulation patterns of the ocean and their causes.

The science instrument suite onboard Jason-3 comprises a radar altimeter for measuring range between ocean surface and satellite, a microwave radiometer for atmospheric corrections, and three instruments for accurately determining the precise location of the satellite using space-based GPS and earth-based beacons. Jason-3 will measure sea-level variations over the global ocean with very high accuracy (within 3.3 centimeters) to produce a long-term, reliable record of ocean surface topography that will be used by scientists and operational agencies (NOAA, European weather agencies, marine operators, etc.) for scientific research and operational oceanography for the benefit of society.

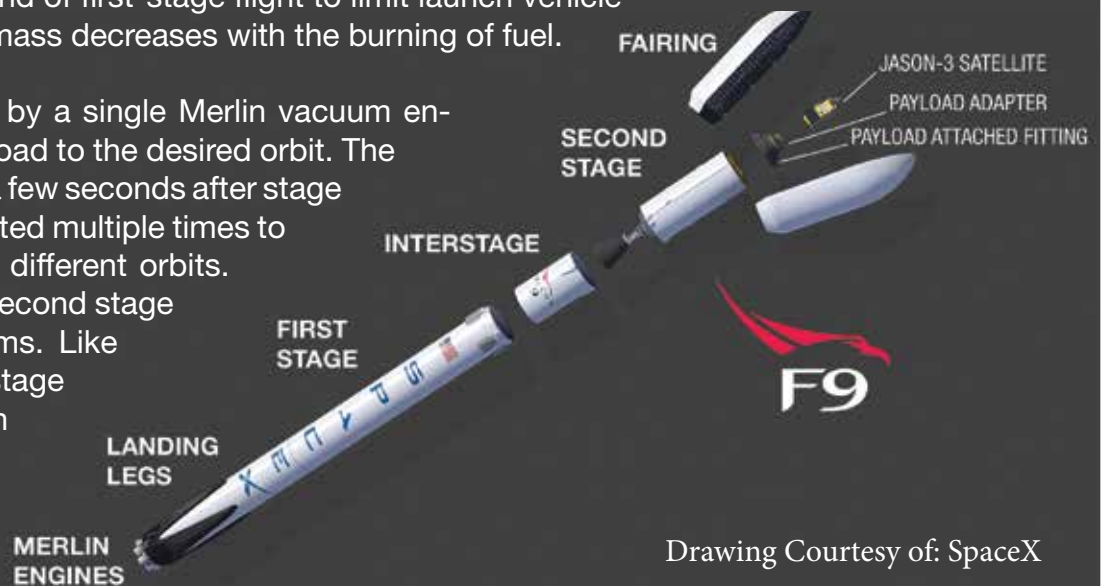
TOPEX/Poseidon and Jason-1 were cooperative missions between NASA and the French space agency, CNES. Additional partners in the OSTM/Jason-2 mission included NOAA and EUMETSAT. Jason-3 continues the international cooperation with NOAA and EUMETSAT providing overall programmatic leadership and NASA and CNES leading the flight system development.

# Falcon 9

Falcon 9 is a two-stage rocket designed and manufactured by SpaceX for the reliable and safe transport of satellites and the Dragon spacecraft into orbit. As the first rocket completely developed in the 21st century, Falcon 9 was designed from the ground up for maximum reliability. Falcon 9's simple two-stage configuration minimizes the number of separation events -- and with nine first-stage engines, it can safely complete its mission even in the event of an engine shutdown.

Falcon 9's first stage incorporates nine Merlin engines and aluminum-lithium alloy tanks containing liquid oxygen and rocket-grade kerosene (RP-1) propellant. After ignition, a hold-before-release system ensures that all engines are verified for full-thrust performance before the rocket is released for flight. Then, with thrust greater than five 747s at full power, the Merlin engines launch the rocket to space. Unlike airplanes, a rocket's thrust actually increases with altitude; Falcon 9 generates 1.3 million pounds of thrust at sea level but gets up to 1.5 million pounds of thrust in the vacuum of space. The first stage engines are gradually throttled near the end of first-stage flight to limit launch vehicle acceleration as the rocket's mass decreases with the burning of fuel.

The second stage, powered by a single Merlin vacuum engine, delivers Falcon 9's payload to the desired orbit. The second stage engine ignites a few seconds after stage separation, and can be restarted multiple times to place multiple payloads into different orbits. For maximum reliability, the second stage has redundant igniter systems. Like the first stage, the second stage is made from a high-strength aluminum-lithium alloy.



Drawing Courtesy of: SpaceX